

## REMARKS

The Office Action dated January 30, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Following the current amendment, claims 1-3, 5-12, and 14-28 are currently pending in the present application, including independent claims 1, 10, 19, and 25-28. In particular, Applicants have amended claims 1-2, 5-11, 19-23, canceled claims 3 and 12 without prejudice or disclaimer, and added claims 25-28. It is respectfully submitted that the claim amendments and additions add no new subject matter to the present application and serve only to more particularly point out and distinctly claim the subject matter that Applicants regard as the invention. Applicants urge that all grounds for rejection in the Office Action have been addressed and that the present application is currently in condition for allowance in view of the claim amendments, and the following explanations. Therefore, entry of the claim amendments and reconsideration of claims are respectfully requested.

As a preliminary matter, Applicants note that page 2 of the Office Action acknowledges the claim for foreign priority. However, the Office Action indicates that the certified copies of the priority documents have not been received. Applicants respectfully submit that certified copies of the priority documents have been filed for this application on February 3, 2006 as evidenced by enclosed copy of the stamped PTO receipt. Reconsideration of the acknowledgement of the receipt of the certified copies is respectfully requested.

#### Rejection under 35 U.S.C. §112, Second Paragraph

Claims 1-9 and 23 are rejection under 35 U.S.C. §112, Second Paragraph as allegedly failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. In particular, the Office Action objected to the structure of these systems claims because recited “layers” of a communications were allegedly not claimable tangible components under U.S. patent law. Applicants urge that this rejection is now moot in view of the current amendment to claim 1, as requested in the Office Action, to recite an apparatus to provide these layers. Therefore, reconsideration and allowance of pending claims 1-2 and 5-9 and 23 are respectfully requested.

#### Rejections Under 35 U.S.C. 103(a)

Claims 1-21, 23, and 24 were rejected under 35 U.S.C. §103(a) as being allegedly obvious in view of U.S. Patent No. 6,128,328 (Schilling) in combination with U.S. Patent No. 5,889,494 (Reudink). The Office Action asserted that Schilling discloses all recitations of the these claims except that the number of carriers in the capacity layer is variable, and the Office Action further asserted that this deficiency is cured by Reudink. However, as described below, the combination of Schilling and Reudink fails to disclose each and every limitation in any of the pending claims.

Independent claim 1, from which claims 2, 5-9, and 23 depend, relates to an apparatus comprising a defining unit. The defining unit is configured to define a capacity

layer for a cell of a communications system. The cell includes a coverage layer having a fixed coverage area provided by at least one carrier, and the capacity layer includes at least one carrier. Each carrier in the capacity layer has a dynamically variable coverage area, such that the number of carriers in the capacity layer is variable, to thereby dynamically vary the total capacity of the cell.

Independent claim 10, from which claims 11, 14-18, and 24 depend, relates to a method that includes defining a capacity layer for a cell of a communications system. This cell includes a coverage layer having a fixed coverage area provided by at least one carrier, and the capacity layer includes at least one carrier. Each carrier in the capacity layer has a dynamically variable coverage area, such that the number of carriers in the capacity layer is variable, to thereby dynamically vary the total capacity of the cell.

Independent claim 19, from which claims 20-22 depend, relates to an apparatus that includes at least one transmitter configured to transmit a first carrier at a predetermined power level. The transmitter thereby defines a fixed coverage area of a cell of a communications system. The transmitter is configured to transmit a variable number of further carriers thereby defining, at least in part, a dynamically variable total capacity of the cell, such that each of the further carriers has a dynamically variable coverage area.

Independent claim 25 relates to an apparatus that includes means for defining a capacity layer for a cell of a communications system, the cell comprising a coverage layer having a fixed coverage area provided by at least one carrier, the capacity layer comprising at least one carrier. Each carrier in the capacity layer has a dynamically

variable coverage area, such that the number of carriers in the capacity layer is variable, to thereby dynamically vary the total capacity of the cell.

Independent claim 26 relates to a computer readable medium having computer executable components. The components include defining a capacity layer for a cell of a communications system. This cell includes a coverage layer having a fixed coverage area provided by at least one carrier, and the capacity layer includes at least one carrier. Each carrier in the capacity layer has a dynamically variable coverage area, such that the number of carriers in the capacity layer is variable, to thereby dynamically vary the total capacity of the cell.

Independent claim 27 relates to an apparatus that includes means for transmitting a first carrier at a predetermined power level thereby defining a fixed coverage area of a cell of a communications system. The apparatus also includes means for transmitting a variable number of further carriers, thereby defining, at least in part, a dynamically variable total capacity of the cell, wherein each of the further carriers has a dynamically variable coverage area.

Independent claim 28 relates to a cellular communication system including at least one cell. The cell includes a coverage layer having a fixed coverage area provided by at least one carrier, and a capacity layer comprising at least one carrier. Each carrier in the capacity layer has a dynamically variable coverage area, wherein the number of carriers in the capacity layer is variable, to thereby dynamically vary the total capacity of the cell.

As described below, Applicants urge that the combination of Schilling and Reudink fails to disclose each and every limitation in any of the above-presented independent claims.

As described in the prior submission, certain recited embodiments of the present application provide significant technical benefits and are particularly useful in TDMA systems, such as that described in the present application. The number of carriers in each cell can be dynamically varied so that at times when a large number of users wish to communicate with the base station, the number of carriers in the cell can be increased to accommodate the extra demand. However, at times when only a small number of users wish to communicate with the base station, the number of carriers in the cell can be reduced to decrease the power consumption in the cell and also the interference between cells. Hence, by dynamically varying the total capacity of the cell, the system can adapt to the current requirements of the system and therefore optimize the system. As described, for example, in paragraph [0112] of the specification this can lead to a cheaper radio network, no waste of resources, and efficient spectrum utilization. As described below, no such feature is disclosed or suggested in Schilling or Reudink.

As described in Applicants' prior submissions, Schilling discloses a CDMA cellular communication system including at least one cell. *See, for example*, elements A, B, C, in Figure 5. Each cell is split up into a number of different regions. Each region is assigned a frequency range (F1-F6) that is different to the frequency range assigned to its adjacent regions (See Figures 5 and 8). Each frequency range can accommodate a certain number of remote units communicating with the base station in the CDMA system. For

example in column 12, lines 59 to 64, it states that each frequency range could accommodate 80 remote units. If the number of units in a region exceeds 80, and the number of units in an adjacent region is below 80 then the region size should be adjustable to meet the demand.

Although each region in Schilling may adjust its size, Schilling discloses that the number of regions and the total capacity of each region is fixed. Therefore the capacity of each cell is fixed (i.e. the number of remote users that can be accommodated in each cell cannot vary). There is nothing in Schilling to suggest that the capacity of the cell could vary.

The Office Action asserted that Shilling discloses “dynamically varying the capacity of the cell” and refers to sections of Schilling in an attempt to back up this assertion. In particular, the Office Action refers to column 12 lines 54 to 65 and alleged that the sector size is adjustable to accommodate from 80 users originally to now 81 users. It is respectfully submitted by the Applicants that in Schilling it is not the case that 81 users can be accommodated in a sector that has capacity for only 80 users. Rather, if there is spare capacity in an adjacent sector, the size of the sectors can be adjusted such that one of the users in the over-subscribed sector switches sectors to use the under-subscribed sector. Moreover, Applicants note that the sectors within the cell can be resized to meet the demand, but the capacity of the cell does not vary.

Applicants therefore urge that, contrary to the assertions in the Office Action, Schilling does not disclose the recitations in claim 1 of “a fixed coverage area” or “dynamically varying the capacity of the cell.” Instead, as described above, the coverage



area in Schilling is variable and the total capacity is fixed. Furthermore, as conceded in the Office Action, Schilling also does not disclose the claimed “the number of carriers in the capacity layer is variable.” For at least these reasons, Applicants note that Schilling by itself does not teach or suggest each and every limitation of claim 1.

Applicants further urge that Reudink does not cure these deficiencies in Schilling. Instead, Reudink discloses a system for dynamically sizing sectors of a multi-sectored radiation pattern. Multiple narrow beams are used and the number of narrow beam signals provided to inputs associated with a particular sector defines the azimuthal width of that sector.

Referring now to the recitations of claim 1, Reudink therefore does not and cannot disclose “each carrier in the capacity layer having a dynamically variable coverage area.” Moreover, Reudink further does not disclose “wherein the number of carriers in the capacity layer is variable, to thereby dynamically vary the capacity of the cell.”

The Office Action refers to to column 11, lines 23 to 38 of Reudink in an attempt to show the feature “wherein the number of carriers in the capacity layer is variable.” However, Applicants urge that this section of Reudink merely states “sector controller 460 may adjust the splitter/switch matrixes of the present invention to provide alternative sector sizing and thus increase the number of channels, or other resources, available to a particular area within the cell, or improve signal quality associated with a sector or user.” When more channels are provided to a particular area within a cell, these channels must be taken away from another area that has less user demand. The total number of channels

within the cell is fixed, and in the examples given in Reudink, the total number of channels within a cell is fixed at 12.

Even if the cell 201 of Figure 2 of Reudink is considered to be a recited “cell” of claim 1 (not admitted), Applicants note that the coverage area of this cell is fixed, and that the number of carriers in the cell and, therefore, the total capacity of the cell are also fixed. Alternatively, if a sector of a cell such as 151 in Figure 1B could be considered a “cell” a recited “cell” of claim 1 (also not admitted), Applicants further note that the coverage area varies and the capacity of the “cell” varies as the number of narrow beams in the sector is changed, and this disclosure in Reudink teaches away from the express recitations of claim 1. Specifically, neither of these interpretations of Reudink, nor any proper reading of the reference, include the recited combination of features of embodiments of the present application in which the coverage area of the cell is fixed and the number of carriers in the capacity layer is variable to thereby dynamically vary the total capacity of the cell, as recited in Applicants’ claim 1.

In summary, Applicants note that the combination of Schilling and Reudink fails to disclose each and every limitation of claim 1. For example, as described above neither Schilling nor Reudink discloses the features of claim 1 “wherein the number of carriers in the capacity layer is variable, to thereby dynamically vary the capacity of the cell.” Instead, both of the cited references describe methods of resizing the sectors of the cell, not of varying the capacity of the cell.

For example, Figure 8 of Schilling discloses that the sectors are arranged in a specific order to minimize the interference of adjacent cells. Adding a new carrier at a



new frequency (*see, e.g.*, F7 in the terminology used in Figure 8 of Schilling) would disrupt the entire system, and Schilling contains no disclosure or suggestion regarding how the sectors of Figure 8 would accommodate this extra frequency.

It is therefore submitted by the Applicants that the combination of Schilling and Reudink does not disclose at least the above identified limitations of claim 1. Moreover, Applicants urge that it would not be obvious to the skilled person how to modify the sector arrangement shown in Figure 8 of Schilling to include such a feature. Therefore Schilling could not be combined with any document to disclose the combination of features now recited in claim 1 without significant additional development and undue experimentation.

For at least these reasons, the combination of Schilling and Reudink fails to disclose each and every limitation of claim, and claim 1 is therefore allowable over this combination of references. Similarly, claims 2, 4-9, and 23 that depend from claim 1 and should be allowed similar grounds, as well as for the additional features recited in these dependent claims.

Likewise, pending independent claims 10 and 19, although different in scope and rejected on different basis, and new independent claims 25-28, contain similar limitations related dynamically varying the total capacity of the cell and are therefore allowable over the combination of Schilling and Reudink on similar grounds. Applicants further submit that because claims 11, 14-18, 20-21, and 24 depend from either claims 10 or 19, these claims are allowable at least for the same reasons as claims 10 and 19, as well as for the

additional features recited in these dependent claims. . Accordingly, withdrawal of this rejection under 35 U.S.C. 103(a) is respectfully requested.

Applicants further urge that the combination of Schilling and Reudink is legally improper under 35 U.S.C. §103(a). As depicted in Figures 5 and 8, Schilling discloses how a cell is split up into concentric regions in which distinct frequencies can be used. In contrast, Reudink discloses equally spaced radial narrow beams are used (Figure 2) and these narrow beams are grouped to form radial sectors within the cells. Thus, the two documents provide alternative, technically incompatible ways of splitting up the cells into sectors. These two cell division cannot be combined because the technical techniques are adverse, and there would be no reasonable expectation for technical success of the combination. Therefore this combination is legally improper. *See*, MPEP §2143. Accordingly, withdrawal of this rejection under 35 U.S.C. 103(a) is also respectfully requested on this legal ground.

Claim 22 was rejected under 35 U.S.C. §103(a) as being allegedly obvious over Schilling and Reudink in view of U.S. Patent Publication No. 2004/0203837 (Lawrence). In particular, the Office Action took the position that Schilling and Reudink disclosed all of the features of claim 22 except at least one transmitting unit is further configured to reduce power allocated to at least one carrier in response to an increase in the variable number of carriers. The Office Action then asserted that Lawrence disclosed this feature. Applicants respectfully submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features recited in claim 22.

Specifically, Schilling and Reudink are deficient at least for the reasons discussed above, and Lawrence fails to cure these deficiencies.

As described in the prior submissions, Lawrence is directed to managing system control signaling to optimize spectrum and other system resources. Lawrence describes making available the spectrum normally occupied by the control channel to service channels (voice or data channels) when the control channel has no further service channels to assign (i.e., all service channels are active). The capability for a control channel radio is defined for operating on a center frequency, assigning traffic to a second radio, supporting the delivery of voice and data, and operating on the same center frequency.

However, Applicants respectfully submit that Lawrence is silent with regards to varying the number of carriers in the capacity layer to dynamically vary the capacity of the cell, as recited in the presently claimed invention. Thus, Lawrence fails to cure the above-described significant deficiencies in Schilling and Reudink.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features recited in claim 22. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Applicants respectfully submit that each of claims 1-2, 5-12, and 14-28 recite features that are neither disclosed nor suggested in any of the cited references. Accordingly, it is respectfully requested that each of claims 1-2, 5-12, and 14-28 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Additional Claims Transmittal  
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